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ANALYTICAL RESULTS REPORT
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH

TDD R8-8508-07

EPA REGIONAL SITE PROJECT OFFICER: ERIC JOHNSON

E&E PROJECT OFFICER: SUSAN KENNEDY
REVIEWED BY Karl Ford

SUBMITTED TO: KEITH SCHWAB, FIT-DPO
WILLIAM GEISE, REM-FIT COORDINATOR

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ANALYTICAL RESULTS REPORT
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH

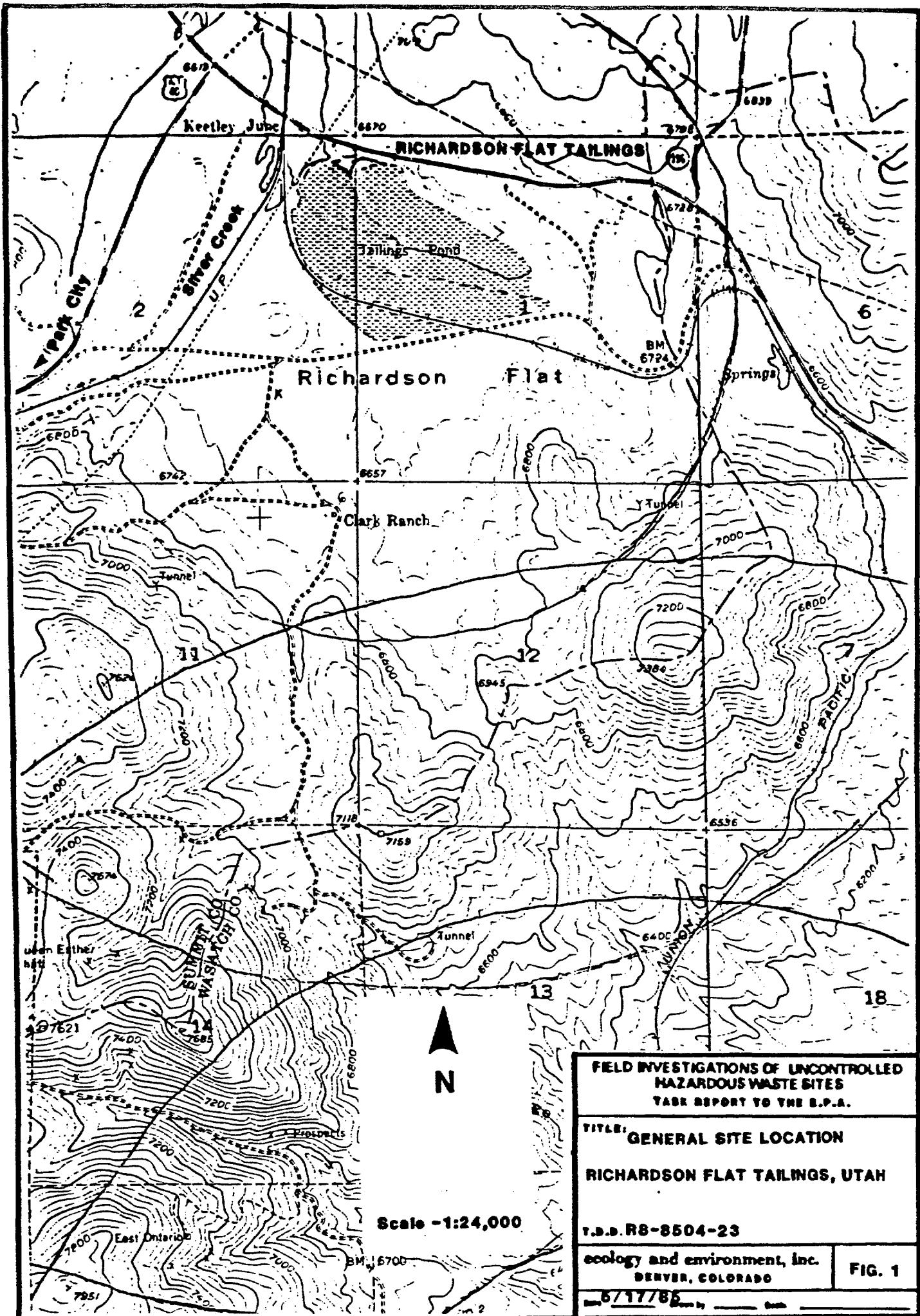
I. INTRODUCTION

This report was prepared to satisfy the requirements of Technical Directive Document (TDD) R8-8508-07, issued to Ecology and Environment, Inc., Field Investigation Team (E&E FIT) by the Region VIII Environmental Protection Agency (EPA).

The samples discussed in this report were collected by the FIT on June 19 and 20, and July 30 through August 2, 1985 from Richardson Flat Tailings near Park City, Utah (Figure 1). Two previous reports, the Report of Sampling Activities (R8-8505-27) and the Sampling Plan (R8-8504-23), present discussions regarding project objectives, site description, sampling procedures, quality control, sample documentation and field observations.

The sampling results discussed in this report consist of three ground water, six surface water, one surface soil, four surface tailings, two subsurface soil and four subsurface tailings samples collected during this investigation.

Richardson Flat Tailings is located in Summit County, Utah, approximately 3.5 miles northeast of Park City. The tailings cover approximately 160 acres in the NW 1/4, Section 1, Township 2 South, Range 1 East, and were piped from the Keetley Ontario Mine Shaft south of Park City. An ephemeral pond overlies the northeastern portion of the tailings, and is contained by a dam at the northwestern end. The site is currently owned by United Park City Mines Company (UPCM) who maintains six monitoring wells located near the base of the dam.



FIELD INVESTIGATIONS OF UNCONTROLLED
HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.

TITLE: GENERAL SITE LOCATION

RICHARDSON FLAT TAILINGS, UTAH

T.D.B.RB-8504-23

ecology and environment, Inc.
DENVER, COLORADO

FIG. 1

6/17/85

II. QUALITY ASSURANCE REVIEW

All samples collected at Richardson Flat Tailings were low hazard, and were analyzed for Task 1 and 2 metals. In addition, surface water samples were analyzed for sulfate, and ground water samples were analyzed for sulfate and cyanide. Subsurface tailings samples were also analyzed for cyanide.

A triple volume surface water sample was collected at station RT-SW-6 for laboratory quality assurance. A duplicate ground water sample (RF-GW-4) was collected from station RF-GW-3 to check laboratory procedures, accuracy and precision.

A review of spike recovery and duplicate sample data was performed at EPA Region VIII Lab, and indicated the analytical procedures used were acceptable. Soil cyanide data were reviewed by E&E FIT chemists and were judged acceptable.

III. ANALYTICAL RESULTS

Analytical results for the 1985 sampling effort at Richardson Flat Tailings have been compiled in Tables 1, 2, 3, 4 and 5. Corresponding sample locations are illustrated in Figure 2. The raw data are attached as Appendix B.

A review of the analytical data allows the following observations and conclusions.

A. GROUND WATER SAMPLES

Upgradient ground water sample RF-GW-1 was collected from the newly installed monitoring well south of the tailings. Samples RF-GW-2 and RF-GW-3 were collected from UPCM monitoring wells located near the base of the dam. RF-GW-4 is a duplicate of sample RF-GW-3.

The ground water samples were analyzed for total metals, cyanide and sulfate, and dissolved metals. Ground water samples are generally analyzed for dissolved metals rather than total metals, but for purposes of comparison, both analyses were performed.

Total metals analyses of downgradient ground water samples (RF-GW-2, RF-GW-3 and RF-GW-4 averaged) revealed ten-fold increases in aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, silver, vanadium and zinc over the background ground water sample RF-GW-1. In contrast, dissolved metals analyses revealed elevated levels of arsenic, cobalt, iron, manganese and zinc using the same comparison. Only manganese, however, is present in higher concentrations than allowed by National Interim Primary drinking water standards (Table 1).

Total cyanide was found at a concentration of 200 ppb in downgradient sample RF-GW-2 as compared to non-detectable levels in the background sample RF-GW-1. However, a notation on the data sheet states the largest part of the RF-GW-2 value is due to an interference.

Based on these findings, an observed release of contaminants to the ground water can be scored according to the Mitre Model for Hazardous Waste Site Ranking using dissolved metals data. A drinking water well, used as a back-up source for Park City residents, is located two and a half miles from the contaminated wells at Richardson Flat Tailings. Hydrologic continuity between the drinking water well and the contaminated wells is unlikely, however, due to the prevailing direction of ground water movement through the unconsolidated deposits (Reference G).

B. SURFACE WATER SAMPLES

Surface water samples RT-SW-1, RT-SW-2 and RT-SW-3 were collected from the east bank of Silver Creek, and RT-SW-4, RT-SW-5 and RT-SW-6 were collected from the intermittent stream which flows through the tailings.

II. QUALITY ASSURANCE REVIEW

All samples collected at Richardson Flat Tailings were low hazard, and were analyzed for Task 1 and 2 metals. In addition, surface water samples were analyzed for sulfate, and ground water samples were analyzed for sulfate and cyanide. Subsurface tailings samples were also analyzed for cyanide.

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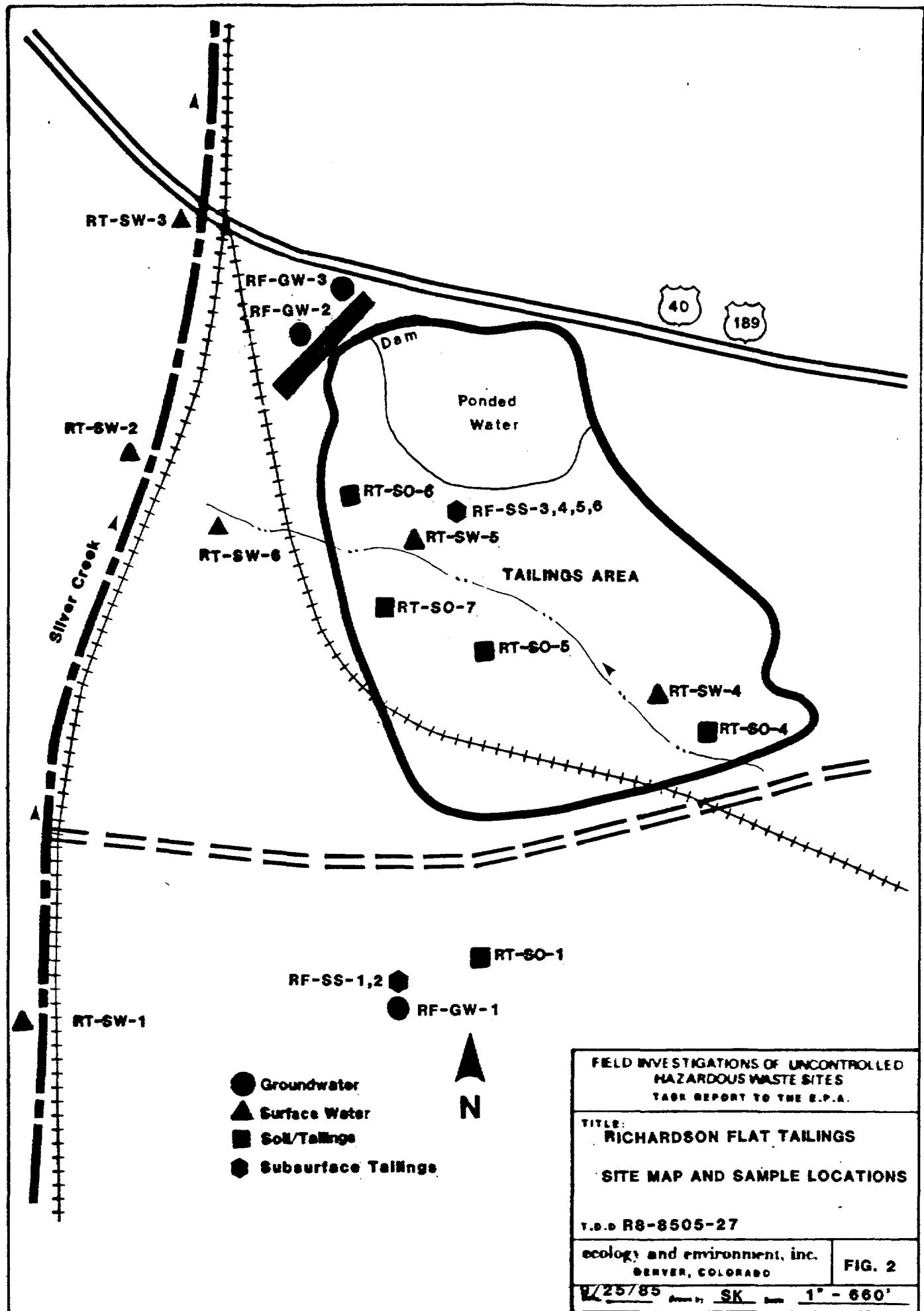
III. ANALYTICAL RESULTS

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A review of the analytical data allows the following observations and conclusions.

A. GROUND WATER SAMPLES

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A comparison of the upgradient Silver Creek sample RT-SW-1 to downgradient samples RT-SW-2 and RT-SW-3 reveals concentrations of aluminum, antimony, arsenic, calcium, copper, iron, lead, manganese, mercury, and zinc are higher in the background sample (RT-SW-1) than the midstream sample (RT-SW-2). This is likely attributed to the Prospector Square Tailings which lie alongside Silver Creek less than two miles upstream of Richardson Flat.

Concentrations of the above constituents are relatively high in the background sample RT-SW-1 collected approximately one mile downstream of Prospector Square Tailings. Concentrations are lowest in sample RT-SW-2 collected one and a half miles downstream of Prospector Square Tailings and upgradient of Richardson Flat Tailings. Highest concentrations, however, are found in sample RT-SW-3, immediately downstream of Richardson Flat Tailings.

In spite of relatively high levels of Task 1 and 2 metals in the background sample RT-SW-1, a ten-fold increased concentration of lead was found in downgradient sample RT-SW-3 when compared with the background sample. In addition, a four fold increase of arsenic levels was found in RT-SW-3. Thus, the surface water data can be used as direct evidence of an observed release, as stipulated by HRS scoring guidelines.

Surface water from Silver Creek is diverted approximately 1,000 feet downstream of Richardson Flat Tailings, and is used to irrigate pasture land and hay fields. Silver Creek is not used as a drinking water source for human populations.

Analyses of surface water samples RT-SW-4, RT-SW-5 and RT-SW-6 collected from the intermittent on-site diversion ditch revealed elevated levels of aluminum, antimony, arsenic, barium, calcium, lead, magnesium and sodium. Water in the diversion ditch flows to a marshy area located just west of the dam, and into Silver Creek directly upstream of RT-SW-3.

C. SOIL AND TAILINGS SAMPLES

Analytical data for surface tailings samples (RT-SO-4, RT-SO-5, RT-SO-6 and RT-SO-7) reveal elevated concentrations of arsenic, cadmium, calcium, copper, lead, magnesium, mercury, silver, sodium and zinc, as compared to the off-site background soil sample (RT-SO-1). Elevated levels of the above constituents are typical in metal mine tailings, however, the off-site background soil sample contains substantially higher levels of arsenic, cadmium, lead, mercury and zinc as compared to mean concentrations for the Western United States (Table 4). Wind-blown tailings material is probably the primary source of contamination to nearby off-site surface soil. This idea is substantiated by comparison of the background surface soil sample data (RT-SO-1) to subsurface soil data (RF-SS-1, RF-SS-2). Most of the elemental constituents are elevated in the surface soil, but are greatly reduced in subsurface soil samples.

Data from subsurface tailings samples RF-SS-3, RF-SS-4 and RF-SS-5 indicate downward migration of antimony, arsenic, cadmium, copper, lead, magnesium, mercury, silver, sodium and zinc. As a result, soil beneath the tailings (RF-SS-6) contains elevated concentrations of all of the above constituents. Subsurface tailings data are presented in Table 5.

IV. SUMMARY

Although other upstream tailings or mining operations may be contributing inorganic contaminants to Silver Creek, a significant increase in surface water lead concentrations can be attributed to Richardson Flat Tailings. Water from Silver Creek is used for local irrigation.

A significant release of arsenic, cobalt, iron, manganese and zinc to downgradient ground water was demonstrated. However, hydrologic continuity between the contaminated aquifer and current

drinking water sources is unlikely. Any expansion of the Park City water supply should be thoroughly evaluated based on these findings.

Surface and subsurface tailings material contain high concentrations of heavy metals and arsenic. Subsurface tailings sample data indicate downward movement of contaminants in the solid matrix.

Elevated levels of metals and arsenic in nearby off-site soil may be attributed to wind-blown tailings from Richardson Flat.

V. RECOMMENDATIONS

1. An observed release of contaminants to the air route was scored based on photo-documentation of air-borne tailings material during collection of surface tailings sample (RT-SO-7). It is recommended that high-volume air sampling be conducted at the site to further substantiate and complete the HRS package.

2. Because the tailings material contains high concentrations of metals and arsenic, the area should be fenced to prevent on-site grazing by domestic sheep and cattle, and to keep people off the site.

3. Further surface water and sediment sampling is recommended to fully assess the hazard associated with irrigating area pasture land with water diverted directly downstream from Richardson Flat.

TABLE 1. ANALYTICAL DATA FOR UNFILTERED GROUND WATER SAMPLES
COLLECTED AT RICHARDSON FLAT TAILINGS, UTAH.
(Results in ug/l, ppb)

Parameter	Hole #1 RF-GW-1 Totals	UPCM #2 RF-GW-2 Totals	UPCM #1 RF-GW-3 Totals	UPCM #1 RF-GW-4 Totals	Drinking Water Criteria
TASK 1&2 METALS					
Aluminum	1,040	4,920	80,700	83,400	5,000(c)
Antimony	<5	63sc	<5	<5	146(b)
Arsenic	<5	349sc	78	70	50(a)
Barium	83	2,665sc	1,534	1,354	1,000(a)
Beryllium	<10	<10	<10	<10	0.037(b)
Cadmium	<5	16	42	48	10(a)
Calcium*	45	314	352	332	
Chromium	<5	42	98	104	50(a)
Cobalt	<5	80	46	48	
Copper	<5	190	1,583	1,350	1,000(b)
Iron	958	26,300	126,000	130,000	700(d)
Lead	<30	1,080	588	527	50(a)
Magnesium*	9.9	72	88	85	
Manganese	20	10,400	2,230	2,070	50(a)
Mercury	<0.1	0.1	0.70	0.60	2.0(a)
Nickel	<30	30	88	82	13.4(b)
Potassium					
Selenium	<5	<5	<5	<5	10(a)
Silver	<5	17	<5	<5	50(a)
Sodium*	16	54	44	44	
Thallium	<100	<100	<100	<100	13(b)
Tin					
Vanadium	<10	17	262	266	
Zinc	<5	2,790	650	569	5,000(b)
TASK 3 METAL CYANIDE					
Cyanide	<10	200	<10	<10	200(c)
SPECIAL ANION SULFATE*					
Sulfate*	35	775	625	1,025	250,000(c)

*mg/l or ppm

TABLE 2. ANALYTICAL DATA FOR FILTERED GROUND WATER SAMPLES
COLLECTED AT RICHARDSON FLAT TAILINGS, UTAH.
(Results in ug/l, ppb)

Parameter	Hole #1 RF-GW-1 Dissolved	UPCM #2 RF-GW-2 Dissolved	UPCM #1 RF-GW-3 Dissolved	UPCM #1 RF-GW-4 Dissolved
TASK 1&2 METALS				
Aluminum	<30	<30	<30	<30
Antimony	<5	<5	<5	<5
Arsenic	<5	9	<5	9
Barium	78	99	104	104
Beryllium	<10	<10	<10	<10
Cadmium	<5	<5	<5	<5
Calcium*	47	307	254	254
Chromium	<5	<5	<5	<5
Cobalt	<5	67	10	10
Copper	<5	<5	<5	<5
Iron	<10	14,800	376	300
Lead	<30	<30	<30	<30
Magnesium*	9.8	70	56	56
Manganese	11	9,990	924	903
Mercury	<0.1	<0.1	<0.1	<0.1
Nickel	<30	<30	<30	<30
Potassium				
Selenium	<5	<5	<5	<5
Silver	<5	<5	<5	<5
Sodium*	16	52	42	44
Thallium	<100	<100	<100	<100
Tin				
Vanadium	<10	<10	<10	<10
Zinc	6	144	<5	<5
TASK 3 METAL Cyanide				

*mg/l or ppm

TABLE 3. ANALYTICAL DATA FOR SURFACE WATER
COLLECTED AT RICHARDSON FLAT TAILINGS, UTAH.
(Results in ug/l, ppb)

Parameter	Upstream SC RT-SW-1	Midstream SC RT-SW-2	Downstream SC RT-SW-3	Southeast IS RT-SW-4	Mid IS RT-SW-5	West IS RT-SW-6
TASK 1&2 METALS	Total	Total	Total	Total	Total	Total
Aluminum	172	77	370	450	<30	35
Antimony	21	15	35	19	13	7
Arsenic	14	11	65	33	27	12
Barium	36	41	53	119	26	27
Beryllium	<10	<10	<10	<10	<10	<10
Cadmium	<5	<5	<5	<5	<5	<5
Calcium	137,000	119,000	124,000	128,000	252,000	287,000
Chromium	<5	<5	<5	<5	<5	<5
Cobalt	<5	<5	<5	<5	<5	<5
Copper	12	9	60	18	<5	<5
Iron	725	389	2,290	1,570	507	215
Lead	147	93	1,985	237	42	<30
Magnesium	22,200	24,000	26,000	35,400	55,400	59,200
Manganese	764	434	727	602	1,654	2,566
Mercury	0.2	0.1	0.57	0.1	<0.1	<0.1
Nickel	<30	<30	<30	<30	<30	<30
Potassium						
Selenium	<5	<5	<5	<5	<5	<5
Silver	<5	<5	<5	<5	<5	<5
Sodium	31,700	25,600	25,200	36,500	29,000	37,300
Thallium	<100	<100	<100	<100	<100	<100
Tin						
Vanadium	<10	<10	<10	<10	<10	<10
Zinc	2,690	1,650	2,730	350	1,410	812
SPECIAL ANION						
Sulfate	284	222	210	218	963	909
Chloride	47	27	28	50	40	33
pH	7.33	7.54	7.47	7.26	7.40	7.40
Conductivity**	600	600	550	700	1,200	1,400
Temperature °C	21	21	19	20	21	21

SC - Silver Creek

IS - Intermittent Stream

** - umhos/cm

TABLE 4. ANALYTICAL DATA FOR SURFACE SOIL AND TAILINGS
SAMPLES COLLECTED AT RICHARDSON FLAT TAILINGS, UTAH.
(Results in ug/g, ppm)

Parameter	Background Soil RT-SO-1	Southeast Tailings RT-SO-4	Middle Tailings RT-SO-5	Northwest Tailings RT-SO-6	North Tailings RT-SO-7	Mean for Western US*
TASK 1&2 METALS						
Aluminum	14,400	3,440	863	794	1,340	58,000
Antimony	39	<200	<200	<400	<300	0.47
Arsenic	58	3,600	1,500	900	600	5.5
Barium	178	105	58	6.2	27	580
Beryllium	<1.6	<1.9	<1.4	<1.6	<1.5	0.68
Cadmium	17	47	40	80	58	0.2
Calcium	8,200	45,600	49,500	16,900	75,200	
Chromium	24	60	15	7.8	19	41
Cobalt	11	6.9	2.3	<0.9	1.5	7.1
Copper	94	227	181	371	961	21
Iron	24,000	30,700	19,900	154,000	106,000	21,000
Lead	1,110	3,320	2,650	7,010	8,530	17
Magnesium	4,990	14,600	15,300	3,960	13,100	
Manganese	879	1,650	1,810	510	5,150	380
Mercury	0.59	1.70	2.61	0.14	0.50	0.05
Nickel	12	59	5.2	9.6	16	15
Potassium						
Selenium	<16	<20	<300	<400	<300	0.23
Silver	6.7	20	19	24	22	0.2
Sodium	1,020	3,470	2,960	3,280	2,280	
Thallium	<16	<19	<14	<18	<15	0.2
Tin						
Vanadium	37	9.1	3.5	4.8	6.5	70
Zinc	1,570	6,360	5,400	5,870	3,780	55
% Solids	97.4	95.8	96.9	90.6	93.7	

* Reference f

TABLE 5. ANALYTICAL DATA FOR SUBSURFACE SOIL AND TAILINGS
SAMPLES COLLECTED AT RICHARDSON FLAT TAILINGS, UTAH.
(Results in ug/g, ppm)

Parameter	Soil 5-7' RF-SS-1	Soil 10-12' RF-SS-2	Oxidized Tailing RF-SS-3	Reduced Tailings RF-SS-4	Tailings/ Soil Contact RF-SS-5	Soil beneath Tailings RF-SS-6
TASK 1&2 METALS						
Aluminum	16,900	16,700	844	484	1410	12,400
Antimony	<1	<1	31	49	171	14
Arsenic	6.5	6.3	311	328	218	34
Barium	125	147	31	86	64	235
Beryllium	<2	<2	<2	<2	<2	<2
Cadmium	6.8	7.4	53	169	61	15
Calcium	6,190	5,020	81,600	117,000	54,200	9,200
Chromium	19	19	6.3	16	14	15
Cobalt	8.7	9.5	<1	<1	4.5	16
Copper	14	17	225	225	335	105
Iron	18,500	19,700	80,800	68,000	22,600	15,100
Lead	37	37	2,770	4,720	4,920	1,090
Magnesium	6,240	7,620	11,100	12,900	13,300	4,530
Manganese	471	625	5,990	5,880	1,630	1,220
Mercury	<.05	<.05	0.94	1.97	2.26	0.40
Nickel	21	22	7	<6	<6	16
Potassium						
Selenium	<1	<1	1.0	<1	9.4	1.3
Silver	<1	<1	7.9	13	26	6.9
Sodium	308	279	2,230	11,300	6,100	1,010
Thallium	<20	<20	<20	<20	<20	<20
Tin						
Vanadium	31	28	3.1	<2	5.4	30
Zinc	70	44	3,980	23,200	12,700	1,510
% Solids	79.2	77.4	86.4	88.3	88.9	79.1
Task 3 Metal Cyanide	<0.4	<0.4	<0.4	5.2	<0.3	--

REFERENCES

- (a) National Interim Primary Drinking Water Regulations.
(EPA-570/9-76-003.) U.S. Environmental Protection Agency, Office of Drinking Water, 1976.
- (b) U.S. EPA Water Quality Criteria. 1980. Federal Register 45 (231): 203-220.
- (c) Safe Drinking Water Committee, 1982, Drinking Water and Health, National Academy Press, 4:166.
- (d) U.S. EPA, 1976, Quality Criteria for Water.
- (e) Clean Water Act, Code of Federal Regulations (Vol. 40, Parts 100 to 149), July 1, 1982.
- (f) Shacklette, J.T., and Boerngen, J.G.; 1984: Elemental Concentrations in Soil and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270. 105pp.
- (g) Baker, C.H., Jr.; 1970: Water Resources of the Heber-Kamas-Park City Area, North-Central Utah. U.S. Geological Survey Technical Publication No. 27. 79pp.

APPENDIX A
SITE INSPECTION REPORT

Rich. Flats.



Potential Hazardous Waste Site

Site Inspection Report



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

UT D980952840

II. SITE NAME AND LOCATION

01 SITE NAME (Legal common or descriptive name of site) <i>Richardson Flat Tailings</i>	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER <i>~3.5 miles NE of Park City, Utah</i>
03 CITY <i>Park City</i>	04 STATE <i>UT</i> 05 ZIP CODE <i>84060</i> 06 COUNTY <i>Summit</i> 07 COUNTY CODE <i>043</i> 08 CONG DIST <i>UT-03</i>
09 COORDINATES LATITUDE <i>46 46 50.</i> LONGITUDE <i>111 26 40.</i>	10 TYPE OF OWNERSHIP (Check one) <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL _____ <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER _____ <input type="checkbox"/> G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION <i>6, 19, 85</i>	02 SITE STATUS <input type="checkbox"/> ACTIVE <input checked="" type="checkbox"/> INACTIVE	03 YEARS OF OPERATION <i>late 1960's - 1981</i>	04 BEGINNING YEAR ENDING YEAR UNKNOWN
-------------------------------------------	------------------------------------------------------------------------------------------------	----------------------------------------------------	---------------------------------------------

04 AGENCY PERFORMING INSPECTION (Check all that apply)
 A. EPA B. EPA CONTRACTOR *Ecology Environmental Inc (EE)* C. MUNICIPAL D. MUNICIPAL CONTRACTOR _____
 E. STATE F. STATE CONTRACTOR _____ G. OTHER _____

05 CHIEF INSPECTOR <i>Susan Kennedy</i>	06 TITLE <i>Reclamation Biologist</i>	07 ORGANIZATION <i>E&E FIT&</i>	08 TELEPHONE NO <i>(303) 757-4984</i>
09 OTHER INSPECTORS <i>Eric Johnson</i>	10 TITLE <i>EPA Reg. Site Project Officer</i>	11 ORGANIZATION <i>EPA Region 8</i>	12 TELEPHONE NO <i>(303) 293-1519</i>
<i>Jeff Holcomb</i>	<i>Chemical Engineer</i>	<i>E&E FIT&</i>	<i>(303) 757-4984</i>
<i>Tom Smith</i>	<i>Safety Officer</i>	<i>E&E FIT&</i>	<i>(303) 757-4984</i>
<i>Wade Hansen</i>	<i>Geologist</i>	<i>Utah Dept. Env. Health</i>	<i>(801) 533-4455</i>
<i>Rob Smith</i>	<i>Chief Hydrogeologist</i>	<i>E&E FIT&</i>	<i>(303) 757-4984</i>
<i>DAVE Tuesday</i>	<i>Geochemist</i>		
13 SITE REPRESENTATIVES INTERVIEWED <i>E. L. Osika, Jr.</i>	14 TITLE <i>Vice President</i>	15 ADDRESS <i>United Park City Mine 309 Kearns Bldg., SLC, UT</i>	16 TELEPHONE NO <i>(801) 532-4311</i>
<i>Kerry C. Gee</i>	<i>Geologist / Engineer</i>	<i>same as above</i>	<i>(801) 532-4311</i>
			<i>()</i>

17 ACCESS GAINED BY
(Check one:
 PERMISSION
 WARRANT)

18 TIME OF INSPECTION

19 WEATHER CONDITIONS

varied

IV. INFORMATION AVAILABLE FROM

01 CONTACT <i>Eric Johnson</i>	02 OF (Agency/Organization) <i>EPA - Region VIII Denver</i>	03 TELEPHONE NO. <i>(303) 293-1519</i>
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM <i>Susan Kennedy</i>	05 AGENCY <i>EPA</i>	06 ORGANIZATION <i>E&E FIT&</i>
		07 TELEPHONE NO. <i>(303) 757-4984</i>
		08 DATE <i>8/27/85</i>

EPA FORM 2070-13 (7-81)

* 6/19, 20/85
7/30, 31/85
8/1, 2/85



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

D1 STATE UT D2 SITE NUMBER 0980952840

2

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

D1 PHYSICAL STATES (Check all that apply)		D2 WASTE QUANTITY AT SITE <small>(Measures of waste quantities must be independent.)</small>	D3 WASTE CHARACTERISTICS (Check all that apply)
<input checked="" type="checkbox"/> A SOLID <input checked="" type="checkbox"/> B POWDER, FINESS <input checked="" type="checkbox"/> C SLUDGE <input type="checkbox"/> D. OTHER _____ <small>(Specify:)</small>	<input checked="" type="checkbox"/> E SLURRY <input type="checkbox"/> F LIQUID <input type="checkbox"/> G GAS	TONS <u>> 9 million</u> CUBIC YARDS _____ NO. OF DRUMS _____	<input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input checked="" type="checkbox"/> D. PERSISTENT <input checked="" type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IGNITABLE <input type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	D1 GROSS AMOUNT	D2 UNIT OF MEASURE	D3 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS	Elevated		arsenic and Sodium cyanide.
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			Heavy metals in tailings material, at least 7 million tons of tailings

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

D1 CATEGORY	D2 SUBSTANCE NAME	D3 CAS NUMBER	D4 STORAGE/DISPOSAL METHOD	D5 CONCENTRATION	D6 MEASURE OF CONCENTRATION
IOC	Arsenic	999	Surface impoundment	1650	mg/l*
MES	Calcium	999	(tailings)	56	mg/l*
MES	Copper	999		435	mg/l*
MES	Lead	999		538	mg/l*
MES	Manganese	999		2280	mg/l*
MES	Mercury	999		1.24	mg/l*
MES	Nickel	7440-02-0		23	mg/l*
MES	Silver	999		21	mg/l*
IOC	Sodium	999		2998	mg/l*
MES	Zinc	999		5353	mg/l*
IOC	Cyanide	999		5.2	mg/l*

* Concentration figures are averages of 4 surface tailings samples (RT-50-4, 5, 6 & 7). Total metals.

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	D1 FEEDSTOCK NAME	D2 CAS NUMBER	CATEGORY	D1 FEEDSTOCK NAME	D2 CAS NUMBER
FDS	None		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology & Environment, Inc. files - raw data
Sampling Activities Report



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	UD980953840

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input checked="" type="checkbox"/> A GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE <u>8/2/85</u>) 04 NARRATIVE DESCRIPTION <i>Groundwater samples from RT-SW-1, RT-2, LF-69-3 were collected and analyzed. Dissolved metals analysis revealed elevated levels of arsenic, cadmium, iron, manganese, and zinc. A drinking water well, used as a back-up source for Park City residents, is located two and a half miles from the contaminated wells at Richardson Flat. Hydrologic continuity between the drinking water well and the contaminated wells is unlikely, however, due to the prevailing direction*</i>	<input type="checkbox"/> POTENTIAL <input checked="" type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> B SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED <u>878</u>	02 <input type="checkbox"/> OBSERVED (DATE <u>6/20/85</u>) 04 NARRATIVE DESCRIPTION <i>Surface water samples from Silver Creek, collected downgradient of the site contained elevated levels of lead. RT-SW-3 (downgradient) contained 19.85 mg/l lead as compared to RT-SW-1 (upgradient) containing 147.49 mg/l lead. Arsenic levels were also elevated, but not in order of magnitude higher than the upgradient sample.</i>	<input type="checkbox"/> POTENTIAL <input checked="" type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> C CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>Air-borne tailings particles were observed during afternoon gusty winds on June 19, 1985. The EPA FIT did not conduct TIVOL air monitoring at Richardson Flat, however.</i>	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> D FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>No recorded history -- fire and explosive conditions do not exist at the site.</i>	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> E DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>The site is not secured from public access or access by domestic livestock. On June 19 and 20, vehicles were observed driving near the tailings area along the access road. Sheep and cattle were observed walking on the tailings on June 19 and 20, 1985.</i>	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> F CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED <u>640</u> (LF-55-6)	02 <input type="checkbox"/> OBSERVED (DATE <u>8/2/85</u>) 04 NARRATIVE DESCRIPTION <i>Soil beneath the tailings (¹⁹⁸⁵ contains) elevated concentrations of antimony, arsenic, cadmium, copper, lead, magnesium, mercury, silver, sodium and zinc. Off site surface soil (RT-SC-1) contained elevated levels of arsenic, cadmium, lead, mercury and zinc probably due to wind-blown tailings material.</i>	<input type="checkbox"/> POTENTIAL <input checked="" type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> G DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>The Pacific Bridge well (located <u>~2.5 m</u> from the site) is not likely to be affected by contaminants from Richardson Flat tailings. The well is used only as a back-up source of municipal water for Park City residents, with other sources available. Surface water from Silver Creek is not used for drinking water.</i>	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>The tailings are being placed by Mr. Ray, not yet to be used as backfill for sewer lines and road base. In addition, FIT members observed heavy equipment operators dumping what appeared to be native soil on the tailings area.</i>	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input checked="" type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION <i>No recorded history of population exposure or injury, however, the site is not secured from public access or domestic livestock grazing.</i>	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	0980952840

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE 6/19/85) POTENTIAL ALLEGED

Terrapetal tailings: Support vegetation including Juncus sp., Salix sp. & Verbascum thapsus predominantly, but most of the tailings are denuded due to high levels of soluble salts and metals.

01 K DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name of species)

02 OBSERVED (DATE) POTENTIAL ALLEGED

No apparent damage to area fauna. Two muskrats were observed swimming in the drainage ditch on site (near RT-SW-4). Fish in Silver Creek could potentially be affected by lead and arsenic being released from the tailings.

01 L CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 OBSERVED (DATE) POTENTIAL ALLEGED
The possibility exists for metals to move through the food chain if domestic livestock ate feeding on local vegetation that has taken up and stored metals in edible portions of the plant, a) if local populations of fish in Silver Creek are concentrating metals, or are eaten by other animals or man.

01 M. UNSTABLE CONTAINMENT OF WASTES
(Spill Runoff Standing Water Leaching)

02 OBSERVED (DATE) POTENTIAL ALLEGED

03 POPULATION POTENTIALLY AFFECTED

04 NARRATIVE DESCRIPTION

Tailings ponds are uncovered and therefore susceptible to gusty winds which carry fine-grain tailings material off-site. A dam constructed at the northeast end of the tailings presents movement of solid material off-site.

01 N DAMAGE TO OFFSITE PROPERTY

02 OBSERVED (DATE) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

The potential exists for damage to off-site property because the tailings material is allegedly being used as street curb backfill and road base in the Park City area.

01 O CONTAMINATION OF SEWERS, STORM DRAINS, WWTPS

02 OBSERVED (DATE) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

If tailings material is being used as sewer line backfill, the potential exists for sewer contamination by metals.

01 P. ILLEGAL/UNAUTHORIZED DUMPING

02 OBSERVED (DATE) POTENTIAL ALLEGED

04 NARRATIVE DESCRIPTION

Dumping of native soil on to the tailings was observed by FIT members, but is under the supervision of United Park City Mines.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS

No other hazards are known.

III. TOTAL POPULATION POTENTIALLY AFFECTED

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references e.g. state files, sample analysis reports)

Ecology & Environment, Inc. files - Log Book
Sampling Activities Report
State of Utah DSHW Site Investigation and PA



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION**
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

D1 STATE	D2 SITE NUMBER
UT	0980952840

II. PERMIT INFORMATION

D1 TYPE OF PERMIT ISSUED (Check all that apply)	D2 PERMIT NUMBER	D3 DATE ISSUED	D4 EXPIRATION DATE	D5 COMMENTS
<input type="checkbox"/> A NPDES				
<input type="checkbox"/> B UIC				
<input type="checkbox"/> C AIR				
<input type="checkbox"/> D RCRA				
<input type="checkbox"/> E RCRA INTERIM STATUS				
<input type="checkbox"/> F SPCC PLAN				
<input type="checkbox"/> G STATE (Specify)				
<input type="checkbox"/> H LOCAL (Specify)				
<input type="checkbox"/> I OTHER (Specify)				
<input checked="" type="checkbox"/> J NONE				

III. SITE DESCRIPTION

D1 STORAGE/DISPOSAL (Check all that apply)	D2 AMOUNT	D3 UNIT OF MEASURE	D4 TREATMENT (Check all that apply)	D5 OTHER
<input checked="" type="checkbox"/> A SURFACE IMPOUNDMENT	> 1 million	tons	<input type="checkbox"/> A INCINERATION	<input type="checkbox"/> A BUILDINGS ON SITE
<input type="checkbox"/> B PILES			<input type="checkbox"/> B UNDERGROUND INJECTION	Nine
<input type="checkbox"/> C DRUMS, ABOVE GROUND			<input type="checkbox"/> C CHEMICAL/PHYSICAL	
<input type="checkbox"/> D TANK, ABOVE GROUND			<input type="checkbox"/> D BIOLOGICAL	
<input type="checkbox"/> E TANK, BELOW GROUND			<input type="checkbox"/> E WASTE OIL PROCESSING	
<input type="checkbox"/> F LANDFILL			<input type="checkbox"/> F SOLVENT RECOVERY	
<input type="checkbox"/> G LANDFARM			<input type="checkbox"/> G OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H OPEN DUMP			<input type="checkbox"/> H OTHER	
<input type="checkbox"/> I OTHER (Specify)				

D7 COMMENTS

Silt, generated from mining activities, was piped to the Richardson Flat area and currently covers approximately 160 acres. The metal, sulphide and carbonate-containing tailings material is precisely a solid matrix. An ephemeral pond follows the tailings a portion of

IV. CONTAINMENT

D1 CONTAINMENT OF WASTES (Check one)	D2 MODERATE	D3 INADEQUATE, POOR	D4 INSECURE, UNSOUND, DANGEROUS
<input type="checkbox"/> A ADEQUATE, SECURE	<input type="checkbox"/> B MODERATE	<input checked="" type="checkbox"/> C INADEQUATE, POOR	<input type="checkbox"/> D INSECURE, UNSOUND, DANGEROUS

D2 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

A dam at the northwest extension of the tailings is the only form of artificial containment on site. The tailings material is uncovered, and no underlying liner is present.

V. ACCESSIBILITY

D1 WASTE EASILY ACCESSIBLE YES NO

D2 COMMENTS

The site is not secured from public access or domestic livestock grazing.

VI. SOURCES OF INFORMATION (One specific reference e.g. state files sample analysis, reports)

Ecology & Environment - files, logbook, Sampling Activities Report



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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	0980953840

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check all applicable)		02 STATUS			03 DISTANCE TO SITE	
	SURFACE	WELL	ENDANGERED	AFFECTED	MONITORED	
COMMUNITY	A. <input type="checkbox"/>	B. <input checked="" type="checkbox"/>	A. <input checked="" type="checkbox"/>	B. <input type="checkbox"/>	C. <input type="checkbox"/>	A. 2.5 (mi)
NON-COMMUNITY	C. <input type="checkbox"/>	D. <input type="checkbox"/>	D. <input type="checkbox"/>	E. <input type="checkbox"/>	F. <input type="checkbox"/>	B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one):

- A. ONLY SOURCE FOR DRINKING B. DRINKING
(Other sources available)
COMMERCIAL, INDUSTRIAL, IRRIGATION
(Inc other water sources available)
- C. COMMERCIAL, INDUSTRIAL, IRRIGATION D. NOT USED UNUSEABLE
(Limited other sources available)

02 POPULATION SERVED BY GROUND WATER	4500	03 DISTANCE TO NEAREST DRINKING WATER WELL	2.5	(mi)
04 DEPTH TO GROUNDWATER	20 (ft)	05 DIRECTION OF GROUNDWATER FLOW	North	06 DEPTH TO AQUIFER OF CONCERN

06 DEPTH TO AQUIFER OF CONCERN

20 (ft)

07 POTENTIAL YIELD OF AQUIFER

60,000 (gpd)

08 SOLE SOURCE AQUIFER

YES NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings):

Pacific Bridge Well, within 3 miles of the site, is used as a back-up municipal water source for the 4500 residents of Park City, Utah. The well, however, has not been tapped since the summer of 1983. Hydrologic continuity between the well and the contaminated aquifer is unlikely.

10 RECHARGE AREA

YES COMMENTS
 NO

11 DISCHARGE AREA

YES COMMENTS
 NO

IV. SURFACE WATER

01 SURFACE WATER USE (Check one):

- A. RESERVOIR, RECREATION
DRINKING WATER SOURCE B. IRRIGATION, ECONOMICALLY
IMPORTANT RESOURCES C. COMMERCIAL, INDUSTRIAL D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
Silver Creek	<input checked="" type="checkbox"/>	~300 ft (mi)
	<input type="checkbox"/>	(mi)
	<input type="checkbox"/>	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN			02 DISTANCE TO NEAREST POPULATION
ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE	
A 0 NO OF PERSONS	B 8 NO OF PERSONS	C 95 NO OF PERSONS	1.9 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
2	1.9 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area):

Park City, Utah is approximately 3.25 miles Southwest of the site. The population fluctuates from 4500 to 10,000 during the winter ski season. The year-round permanent population is approximately 4500.



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	D980952840

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

A. 10^{-6} - 10^{-5} cm/sec B. 10^{-4} - 10^{-3} cm/sec C. 10^{-3} - 10^{-2} cm/sec D. GREATER THAN 10^{-2} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

A. IMPERMEABLE
(less than 10^{-6} cm/sec) B. RELATIVELY IMPERMEABLE
(10^{-4} - 10^{-3} cm/sec) C. RELATIVELY PERMEABLE
(10^{-2} - 10^{-1} cm/sec) D. VERY PERMEABLE
(Greater than 10^{-1} cm/sec)

03 DEPTH TO BEDROCK

60

(ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

Unknown

05 SOIL pH

7.74

06 NET PRECIPITATION

-12

(in)

07 ONE YEAR 24 HOUR RAINFALL

1.25

(in)

08 SLOPE

SITE SLOPE

0-5 %

DIRECTION OF SITE SLOPE

NNE

TERRAIN AVERAGE SLOPE

0-5 %

09 FLOOD POTENTIAL

10

SITE IS IN 100 YEAR FLOODPLAIN

SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

12 DISTANCE TO CRITICAL HABITAT (for endangered species)

A NA (mi)

B. (mi)

NA (mi)

 ENDANGERED SPECIES *No endangered species in park area*

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

 RESIDENTIAL AREAS, NATIONAL/STATE PARKS,
FORESTS, OR WILDLIFE RESERVES

 AGRICULTURAL LANDS
PRIME AG LAND

AG LAND

adjacent to site

A 3.5 (mi)

B 3 (mi)

C NA (mi)

 D 1 mi (mi)
pastureland, hay

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Richardson Flat is a slight natural depression at the base of the Wasatch Range, adjacent to Silver Creek.

VII. SOURCES OF INFORMATION (One specific references, e.g., state files, sample analysis reports)

Ecology & Environment, Inc. files.
Personal Communication w/ USFWS - Salt Lake City
Seker, C.M. Jr. 1970. Water Resources of the Heber-Kamas & Park City Area. North-Central, Utah Dept. of Nat. Res. Tech. Publ. No. 27.



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

IDENTIFICATION	
01 STATE	02 SITE NUMBER
CIT	0980952840

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	3	EPA Region 8 Laboratory - Lakewood, CO	Rec'd 10/16/85
SURFACE WATER	6	" " " "	Rec'd 7/12/85
TAILINGS Surface WASTE Subsurface	4	" " " "	Rec'd 7/12/85
AIR			
RUNOFF			
SPILL			
SOIL Surface -Subsurface	2	EPA Region 8 Lab EPA Region 8 Lab and Versar, Inc., Springfield, VA	Rec'd 7/12/85 Rec'd 10/16/85
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
pH	Groundwater samples ranged from 6.43 to 6.89 Surface water samples (Silver Cr., tailings and tank) ranged from 7.26 to 7.54
temperature	Groundwater - 9.5°C to 11°C Surface water - 19°C to 20°C
conductivity	Groundwater - 350 to 1450 mhos/cm Surface water - 550 to 1400 mhos/cm
volatile organic(Hg)	no readings greater than background
radiation	no readings greater than background

IV. PHOTOGRAPHS AND MAPS

01 TYPE <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF <u>E&E FIT E files</u> (Name of organization or individual)
03 MAPS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS <u>E&E FIT 8 files</u>

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Site specific references e.g. state files, sample analysis reports)	

Ecology & Environment, Inc. files - Logbook
Sampling Activities Report
Raw Data



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	0980959840

II. CURRENT OWNER(S)

01 NAME <i>United Park City Mines Co.</i>	02 D+B NUMBER	08 NAME <i>NA</i>	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) <i>309 Kearns Bldg.</i>	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
05 CITY <i>Salt Lake City</i>	06 STATE UT	07 ZIP CODE 84101	12 CITY
01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY
01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY
01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY

III. PREVIOUS OWNER(S) (list most recent first)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology & Environment, Inc. f/k/a



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART B - OPERATOR INFORMATION**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT	D980952840

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME <i>United Park City Mines, Co.</i>	02 D+B NUMBER	10 NAME <i>NA</i>	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) <i>309 Kearns Blvd.</i>	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

05 CITY <i>Salt Lake City</i>	06 STATE <i>UT</i>	07 ZIP CODE <i>84101</i>	14 CITY	15 STATE	16 ZIP CODE
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08 YEARS OF OPERATION 09 NAME OF OWNER

Same as above

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
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08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
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08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
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08 YEARS OF OPERATION 09 NAME OF OWNER DURING THIS PERIOD

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology & Environment, Inc. files



**POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION**

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
UT 0980952840	

II. ON-SITE GENERATOR

01 NAME <i>None</i>	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)		
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME <i>None</i>	02 D+B NUMBER	01 NAME	02 D+B NUMBER		
03 STREET ADDRESS (P.C. Box, RFD#, etc.)		04 SIC CODE	03 STREET ADDRESS (F.C. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER		
03 STREET ADDRESS (P.C. Box, RFD#, etc.)		04 SIC CODE	03 STREET ADDRESS (F.C. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME <i>Mr. Ray Worley *</i>	02 D+B NUMBER	01 NAME	02 D+B NUMBER		
03 STREET ADDRESS (P.C. Box, RFD#, etc.) <i>unknown</i>		04 SIC CODE	03 STREET ADDRESS (F.C. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER		
03 STREET ADDRESS (P.C. Box, RFD#, etc.)		04 SIC CODE	03 STREET ADDRESS (F.C. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references e.g., state files, sample analysis reports)

* allegedly removes tailings material for use as gravel line back fill and
roadbed

Ecology & Environment, Inc. files - letter from Dale Parker, Utah SHWC
to Eric Johnson, EPA



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE

02 SITE NUMBER

UT 0980952840

II. PAST RESPONSE ACTIVITIES

01 A. WATER SUPPLY CLOSED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No recorded history*01 B. TEMPORARY WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 C. PERMANENT WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 D. SPILLED MATERIAL REMOVED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 E. CONTAMINATED SOIL REMOVED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 F. WASTE REPACKAGED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 G. WASTE DISPOSED ELSEWHERE
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 H. ON SITE BURIAL
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 I. IN SITU CHEMICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 J. IN SITU BIOLOGICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 K. IN SITU PHYSICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 L. ENCAPSULATION
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 M. EMERGENCY WASTE TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 N. CUTOFF WALLS
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 O. EMERGENCY DIKING/SURFACE WATER DIVERSION

02 DATE _____

03 AGENCY _____

04 DESCRIPTION *A dam was built at the northwestern extension of the tailings to contain the ponded water.*01 P. CUTOFF TRENCHES/SUMP
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

*No*01 Q. SUBSURFACE CUTOFF WALL
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

No



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
UT **D980952840**

II. PAST RESPONSE ACTIVITIES (Continued)

01 R. BARRIER WALLS CONSTRUCTED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 S. CAPPING/COVERING
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 T. BULK TANKAGE REPAIRED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 U. GROUT CURTAIN CONSTRUCTED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 V. BOTTOM SEALED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 W. GAS CONTROL
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 X. FIRE CONTROL
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 Y. LEACHATE TREATMENT
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 Z. AREA EVACUATED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 1. ACCESS TO SITE RESTRICTED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 2. POPULATION RELOCATED
04 DESCRIPTION

No

02 DATE _____

03 AGENCY _____

01 3. OTHER REMEDIAL ACTIVITIES
04 DESCRIPTION

None

02 DATE _____

03 AGENCY _____

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports.)

Ecology & Environment, Inc. files



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

L IDENTIFICATION

01 STATE	02 SITE NUMBER
UT	0980952840

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION YES NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

- No agency enforcement action taken at this site.
- SI performed by State of Utah BSMW 12/2/84
- SI performed by EPA FIT 8 6,7 & 8/85

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Ecology & Environment, Inc. files

APPENDIX B
RICHARDSON FLAT TAILINGS RAW DATA

G R.

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat Tailings

PROJECT CODE RP-8505-²⁷ SAMPLES COLL. BY S. Keenly DATE 6/20/85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE				RT-SW-1	RT-SW-2	RT-SW-3	RT-SW-4
	SAMPLE COLL. TIME				1055	1245	1110	1025
	STATION DESCRIPTION	GW-1	GW-2	GW-3	SW-1	SW-2	SW-3	SW-4
	AND REMARKS	Background well #1 <i>fr</i>	Well #2 <i>fr</i>	Well #3 <i>fr</i>	Background Silver Creek 6-20-85 <i>fr</i>	mid-Silver Creek 6-20-85 <i>fr</i>	downgradient Silver Creek 6-20-85 <i>fr</i>	SE Tailings 6-20-85

CODE	PARAMETER	Total	Total	Total	Total
1-1 poly(mate)	TASK 1&2 METALS	Dissolved	Dissolved	Dissolved	Dissolved
	Aluminum	✓	✓	✓	✓
	Antimony	✓	✓	✓	✓
	Arsenic	✓	✓	✓	✓
	Barium	✓	✓	✓	✓
	Beryllium	✓	✓	✓	✓
	Cadmium	✓	✓	✓	✓
	Calcium	✓	✓	✓	✓
	Chromium	✓	✓	✓	✓
	Cobalt	✓	✓	✓	✓
	Copper	✓	✓	✓	✓
	Iron	✓	✓	✓	✓
	Lead	✓	✓	✓	✓
	Magnesium	✓	✓	✓	✓
	Manganese	✓	✓	✓	✓
	Mercury	✓	✓	✓	✓

Measurements in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mhos/cm}$, as per STORET.

* GPO: 1979-680-570

EPA-012

pH:
temp: °C7.33 7.54 7.47 7.52
21 21 19 20
(600) (600) 550 700

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat Tailings

PROJECT CODE RS-8505-1 SAMPLES COLL. BY S Kennedy DATE 6/20/85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE				RT-SW-1	RT-SW-2	RT-SW-3	RT-SW-4
	SAMPLE COLL. TIME				1055	1245	1110	1025
STATION DESCRIPTION	SW-1	SW-2	SW-3	SW-1	SW-2	SW-3	SW-4	
AND REMARKS Station Numbers on Container tops for SW-2 & SW-5 are opposite designation on tags. SW-4 date indicate, suggest tag reversal. M.W. Hammerly	Background Well #1	Well #2	Well #3	Background Silver Creek 6-20-85	Mud- Silver Creek 6-20-85	down-gradient Silver Creek 6-20-85	SE Tailings 6-20-85	
CODE	PARAMETER	Dissolved	Dissolved	Dissolved	Total	Total	Total	Total
Le-poly (H ₂ O)	Nickel	✓	✓	✓	✓ 130	✓ 130	✓ 130	✓ 130
	Potassium	✓	✓	✓	✓	✓	✓	✓
	Selenium	✓	✓	✓	✓ 25	✓ 25	✓ 25	✓ 25
	Silver	✓	✓	✓	✓ 25	✓ 25	✓ 25	✓ 25
	Sodium	✓	✓	✓	✓ 31700	✓ 25600	✓ 25200	✓ 36500
	Thallium	✓	✓	✓	✓ 2100	✓ 2100	✓ 2100	✓ 2100
	Tin	✓	✓	✓	✓ 210	✓ 210	✓ 210	✓ 210
	Vanadium	✓	✓	✓	✓ 210	✓ 210	✓ 210	✓ 210
	Zinc	✓	✓	✓	✓ 2690	✓ 1650	✓ 2730	✓ 350
	TASK 3 METAL							
	Cyanide	✓	✓	-	X0P4	X0P4	X0P4	X0P4
	SPECIAL ANION							
	Sulfate	✓	✓	✓	✓ 284	✓ 963	✓ 210	✓ 218
	Chloride				✓ 47	✓ 27	✓ 38	✓ 50

Results in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in µmho/cm, as per STORET.

* GPO: 1979-680-570

EPA-012

(Rev. 11-82)

7.33	7.54	7.47	7.26
21	21	19	20
6000	6000	550	700
550	550	500	500

pH:
temp: °C

R15
6/19/81

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat Tailings

PROJECT CODE 88-8505-27

SAMPLES COLL. BY S. Kennedy DATE 6/20/85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE	RT-SW5	RT-SW6	P ¹⁵ 50-1			RT-SO-4	RT-SO-5
	SAMPLE COLL. TIME	1220	1240	1510			1540	1545
	STATION DESCRIPTION	SW-5	SW-6	SO-1	SO-2	SO-3	SO-4	SO-5
	AND REMARKS	mid-tailings 6-20-85	downgradient tailings 6-20-85	background soil 6-19-85	downgradient soil(E) soil (w)	downgradient soil (w)	SE tailings	mid-tailings
CODE	PARAMETER	Total	Total					
1-Lpoly(water)	TASK 1&2 METALS							
	Aluminum	✓ 130	✓ 35	✓ 14400	✓	✓	✓ 3440	✓ 863
8-oz-jar(soil)	Antimony	✓ 13	✓ 7	✓ 39	✓	✓	✓ 1200	✓ 1200
	Arsenic	✓ 27	✓ 12	✓ 58	✓	✓	✓ 3600	✓ 1500
	Barium	✓ 26	✓ 27	✓ 178	✓	✓	✓ 105	✓ 58
	Beryllium	✓ 110	✓ 110	✓ 1106	✓	✓	✓ 11.9	- 11.4
	Cadmium	✓ 15	✓ 15	✓ 17	✓	✓	- 47	- 40
	Calcium	✓ 252000	✓ 287000	✓ 8200	✓	✓	✓ 45600	- 49500
	Chromium	✓ 15	✓ 15	✓ 24	✓	✓	✓ 60	✓ 15
	Cobalt	✓ 15	✓ 15	✓ 11	✓	✓	✓ 6.9	- 2.3
	Copper	✓ 15	✓ 15	✓ 94	✓	✓	✓ 227	✓ 181
	Iron	✓ 507	✓ 215	✓ 24000	✓	✓	- 30700	- 19900
	Lead	✓ 42	✓ 30	✓ 1110	✓	✓	- 3320	- 2650
	Magnesium	✓ 55400	✓ 59200	✓ 4990	✓	✓	- 14600	- 15300
	Manganese	✓ 1654	✓ 2566	✓ 879	✓	✓	- 1650	✓ 1810
	Mercury	✓ 20.1	✓ 20.1	✓ 0.59	✓	✓	- 1.70	- 2.61

all results in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in microsiemens/cm, as per STORET.

★ GPO: 1979-680-570

EPA-012

(Rev. 11-82)

pH: 7.40 7.40
 Temp: 21 21
 ...

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat TailingsPROJECT CODE R8-8505-27SAMPLES COLL. BY S Kennedy DATE 6/19/85RT-49
6/19/85
6/19/85

SAMPLES RECEIVED AT LABORATORY BY _____

DATE _____

DATA REVIEWED BY _____

ANALYST INITIALS	STATION CODE	RT-SW-5	RT-SW-6	RT-SU-1			RT-SO-4	RT-SO-5
	SAMPLE COLL. TIME	1220	1240				1540	1545
STATION DESCRIPTION	SW-5	SW-6	SO-1	SO-2	SO-3	SO-4	SO-5	
AND REMARKS	mid-tailings 6-20-85	down-gradient tailings 6-20-85	background soil 6-19-85	dissolved soil (E) 6-19-85	dissolved soil (W) 6-19-85	SE tailings 6-19-85	mid-tailings 6-19-85	
CODE	PARAMETER	Total	Total					
	Nickel	✓ L30	✓ L30	✓ 12	✓	✓	✓ 59	✓ 502
	Potassium	✓	✓	✓	✓	✓	✓	✓
	Selenium	✓ L5	✓ L5	✓ L16	✓	✓	✓ L20	✓ L300
	Silver	✓ L5	✓ L5	✓ 6.7	✓	✓	✓ 20	✓ 19
	Sodium	✓ 29000	✓ 37300	✓ 1020	✓	✓	✓ 3470	✓ 2960
	Thallium	✓ L100	✓ L100	✓ L16	✓	✓	✓ L19	✓ L14
	Tin	✓	✓	✓	✓	✓	✓	✓
	Vanadium	✓ L10	✓ L10	✓ 37	✓	✓	✓ 9.1	✓ 3.5
	Zinc	✓ 1410	✓ 812	✓ 1570	✓	✓	✓ 6360	✓ 5400
	% Solids			97.4			95.8	96.9
	TASK 3 METAL							
	Cyanide	Xgab	Xgab	✓	✓	✓	✓	✓
	SPECIAL ANION							
	Sulfate	✓ 222	✓ 909					
	Chloride	✓ 40	✓ 33					

All amounts in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mho}/\text{cm}$, as per STORET.

* GPO: 1979-680-570

EPA-012

(Rev. 11-82)

pH: 7.40 7.40
Temp: 21 21
Cond: 1200 1400

EP DNN AL P IC GEI
REGION VIII, DENVER COLORADO

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat Tailings

PROJECT CODE PG-8505-² SAMPLES COLL. BY Skandalis DATE 6/19/85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE	RT-50-6	RT-50-7					
	SAMPLE COLL. TIME	1555	1630					
	STATION DESCRIPTION	50-6	50-7					
	AND REMARKS	NW Tailings 6-19-85	Mil. upper tailings 6-19-85					
CODE	PARAMETER							
8-ajan	TASK 1&2 METALS	/	/					
	Aluminum	/ 794	/ 1340					
	Antimony	/ 2400	/ 1300					
	Arsenic	/ 900	/ 600					
	Barium	/ 6.2	/ 27					
	Beryllium	/ 11.8	/ 11.5					
	Cadmium	/ 80	/ 58					
	Calcium	/ 16900	/ 75200					
	Chromium	/ 7.8	/ 19					
	Cobalt	/ 20.9	/ 1.5					
	Copper	/ 371	/ 961					
	Iron	/ 154000	/ 106000					
	Lead	/ 7010	/ 8530					
	Magnesium	/ 3960	/ 13100					
	Manganese	/ 510	/ 5150					
	Mercury	/ 0.14	/ 0.50					

* if greater than mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in μmhos/cm, as per STORET.

* GPO:1979-680-570

EPA-012

(Rev. 11-83)

EN INM IL P TC GEP
REGION VIII, DENVER COLORADO

CPT-1

LABORATORY SERVICES REQUEST

PROJECT NAME Richardson Flat Tailings

PROJECT CODE R8-1505-27

SAMPLES COLL. BY S. Kennedy DATE 6/19/85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE	RT-SO-6	RT-SO-7					
	SAMPLE COLL. TIME	1555	1630					
	STATION DESCRIPTION	SO-6	SO-7					
	AND REMARKS	NW Tailings 6-19-85	mid- upper Tailings 6-19-85					
CODE	PARAMETER							
R-oz-gas	Nickel	✓ 9.6	✓ 16					
	Potassium	✓ —	✓					
	Selenium	✓ 1400	✓ 1300					
	Silver	✓ 24	✓ 22					
	Sodium	✓ 3280	✓ 2280					
	Thallium	✓ 118	✓ 115					
	Tin	✓ —	✓					
	Vanadium	✓ 4.8	✓ 6.5					
	Zinc	✓ 5870	✓ 3780					
	% solids	90.6	93.7					
	TASK 3 METAL							
	Cyanide	✓	✓					
	SPECIAL ANION							
	Sulfate							

gamma in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mho}/\text{cm}$, as per STANET.

* GPO: 1979-680-570

NSPA-012

(Rev. 11-82)

mid 8/6/85

LABORATORY SERVICES REQUEST

PROJECT NAME

RF

PROJECT CODE 850527 SAMPLES COLL BY D.T. DATE 8-2-85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INPUT PAGE	STATION CODE	PF 6w-1	PF 6w-3	PF 6w-4	PF 6w-1	PF 6w-2	PF 6w-3	PF 6w-4
	SAMPLE COLL TIME	1700	1915	2006	1700	1630	1815	2000
	STATION DESCRIPTION	RT-1	MN #1	mn well #4	RT-1	mn well #2	RT-1 well #1	MN well #4
	AND REMARKS							
	CODE	PARAMETER	TOTALS	TOTALS	TOTALS	DILUTED	DILUTED	DILUTED
		TASK 162 METALS						
		Aluminum	1040	80700	83400	130	130	130
		Antimony	65	65	65	65	65	65
		Arsenic	65	78	70	65	9	65
		Barium	83	1534	1354	78	99	104
		Beryllium	110	110	110	110	110	110
		Cadmium	65	42	48	65	65	65
		Calcium mg/L	45	352	332	47	307	254
		Chromium	65	98	104	65	65	65
		Cobalt	65	46	48	65	67	10
		Copper	65	1583	1350	65	65	65
		Iron	958	126000	130000	110	14800	376
		Lead	130	588	527	130	130	130
		Magnesium mg/L	9.900	88	85	9.8	70	56
		Manganese	20	2230	2070	11	9990	924
		Mercury	20.1	0.70	0.60	20.1	20.1	20.1

All results in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mho/cm}$, as per STORET.

★ GPO: 1979-680-570

EPA-012

(Rev. 11-82)

pH

Temp.

ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, DENVER, COLORADO

Rec'd 10/6/75

PROJECT NAME RF

PROJECT CODE 8505-27 SAMPLES COLL BY D. Tuesday DATE 8-2-85

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST IN CHARGE	STATION CODE	RF GW-1	RF GW-3	RF GW-4	RF GN-1	RF GN-2	RF GW-3	RF GW-4
	SAMPLE COLL TIME	1700	1915	2000	1700	1630	1915	2000
	STATION DESCRIPTION	RT-1	mon. well #1	min. well #4	RT-1	mon. well #2	mon. well #1	mon. well #14
	AND REMARKS							
	CODE	PARAMETER	✓ Totals	✓ Totals	✓ Totals	✓ Dissolved	✓ Dissolved	✓ Dissolved
	Nickel		230	88	82	230	230	230
	Potassium							
	Selenium		25	25	25	25	25	25
	Silver		25	25	25	25	25	25
	Sodium mg/L		16	44	44	16	52	44
	Thallium		2100	2100	2100	2100	2100	2100
	Tin							
	Vanadium		210	262	266	210	210	210
	Zinc		25	650	569	6	144	25
	TASK 3 METAL							
	Cyanide		✓ <10 8-27-74	✓ <10 8-27-74	✓ <10 8-27-74	✓	✓	✓
	Tog II							
	SPECIAL ANION							
	Sulfate		✓ 35	✓ 625	✓ 1025	✓	✓ 775	✓

All results in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mho}/\text{cm}$, as per STORET.

* GPO: 1979-680-570

REPA-012

(Rev. 11-82)

pH

Turb

Rec-10/15/75

8-1 PS
8-2-8:

PROJECT NAME RF

PROJECT CODE 8505-27 SAMPLES COLL. BY D Tuesday DATE

LABORATORY SERVICES REQUEST

SAMPLES RECEIVED AT LABORATORY BY

DATE

DATA REVIEWED BY

ANALYST INITIALS	STATION CODE	RF SS-1	RF SS-2	RF SS-3	RF SS-4	RF SS-5	RF SS-6	RF GW-2
	SAMPLE COLL. TIME	8-2 1711	8-2 1300	8-2 1100	8-2 1450	8-2 1600	8-2 1600	1630
	STATION DESCRIPTION	Split spoon hole RT-1	split spoon Hole RT-1	split spoon Hole RT-2	split spoon Hole RT-2	split spoon Hole RT-2	split spoon Hole RT-2	MCA Well #2
	AND REMARKS	metals H ₂ O filtered w/ HNO ₃ (N ⁻ " " NaOH)						

CODE	PARAMETER	Totals						
12 poly (H ₂ O)	TASK 382 METALS	✓	✓	✓	✓	✓	✓	✓
8-02 Jrn (Soil)	Aluminum	16900	16700	844	484	1410	12400	4920
	Antimony	L1	L1	31	49	171	14	26550
	Arsenic	6.5	6.3	311	328	218	34	210 SC
	Barium	125	147	31	86	64	235	2695 SC
	Beryllium	L2	L2	L2	L2	L2	L2	L10
	Cadmium	6.8	7.4	53	169	61	15	16
	Calcium mg/l/61kg.	6190	5020	81600	117000	54200	9200	344
	Chromium	19	19	6.3	16	14	15	42
	Cobalt	8.7	9.5	L1	L1	4.5	16	80
	Copper	14	17	225	225	335	105	190
	Iron	18500	19700	80800	68000	22600	15100	26300
	Lanthanum	37	37	2770	4720	4920	1090	1080
	Magnesium mg/l/61kg.	6240	7620	11100	12900	13300	4530	72
	Manganese	471	625	5990	5880	1630	1220	10400
	Precip.	✓	<.05	✓	0.94	✓	2.26	✓

All results in mg/l unless otherwise indicated, heavy metals in ug/l, pH in units, turbidity in JTU, specific conductance in $\mu\text{mhos/cm}$, as per STORET.

★ GPO: 1979-680-570

EPA-012

(Rev. 11-62)

pH

temp

soils are 1g/gm

Versar Inc.

Cyanide

Richardson & al 1981ings

Project/Batch 751249-3

CASE/Batch ID 1801H

Date 8/13/85

VERSAR, INC.
GENERAL INORGANIC CHEMISTRY SECTION
DATA REPORT

WJN for
Laboratory Manager